

Refunding and Reorganizing Your Agency's Debt Obligations

Municipal Debt Essentials: Debt Administration

California Debt and Investment Advisory Commission

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What is a refunding?

- A refunding occurs when the proceeds from a debt issue are used to retire or pay debt service on previously issued bonds
 - The prior debt is considered “defeased”
 - Once a refunding is executed, the refunding transaction is on the issuer’s books and the defeased debt is removed from the issuer’s books
- Refundings are done to:
 - Provide debt service and/or present value savings
 - Remove or change a bond covenant (i.e. permit a surety policy in the DSRF, change the additional bond test)
 - Change the mode or term of a bond (ie: fixed to variable, weekly reset to longer put/term mode, extend the maturity, etc.)

Types of Refundings

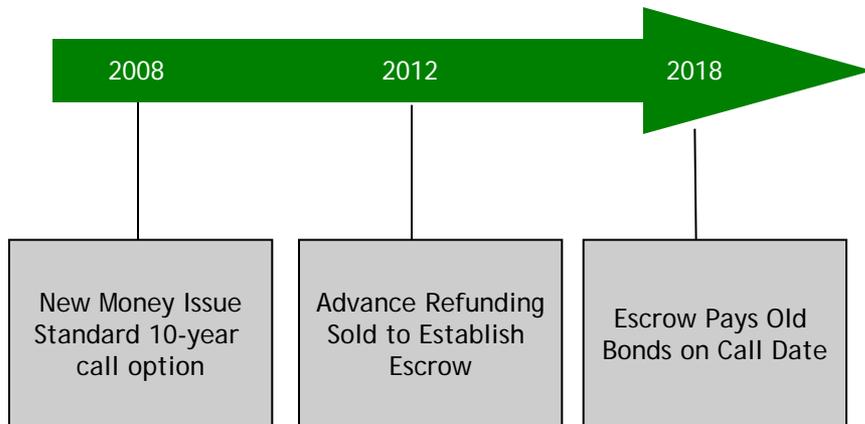
- An Advance Refunding
 - A refunding escrow is established more than 90 days before the redemption date of the old debt
 - In general, a tax-exempt bond can only be advance refunded once
- A Current Refunding
 - A refunding escrow is established less than 90 days before the redemption date of the old debt
 - There are no restrictions on the number of current refundings

Current vs. Advance Refunding

KEY TYPES OF REFUNDINGS

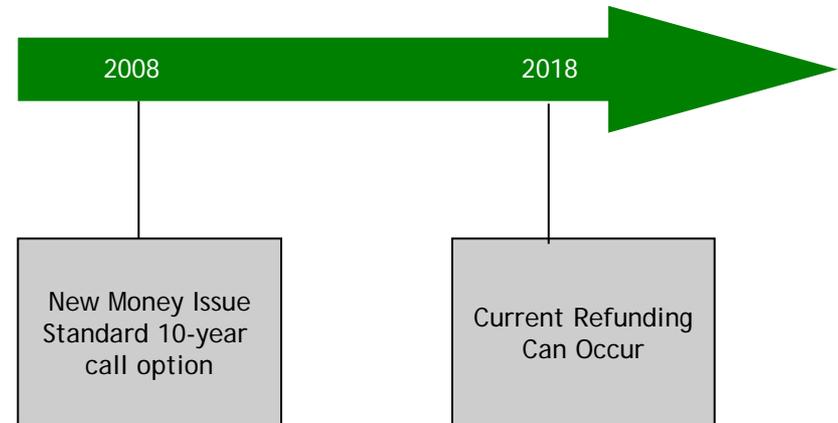
ADVANCE REFUNDING

A refunding is established more than 90 days in advance of the original issue's call or maturity date. An issue can be advance refunded only once.



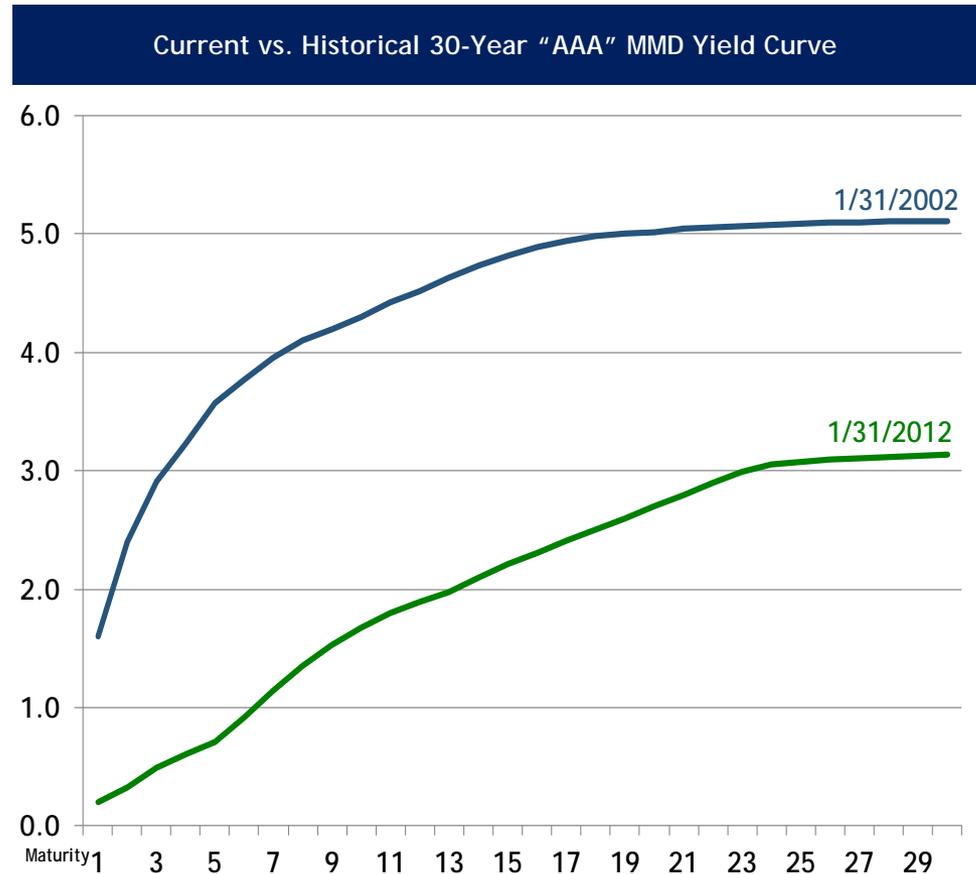
CURRENT REFUNDING

A refunding escrow is established within 90 days of the original issue's call or maturity date. There is no limit on the number of times that a tax exempt bond can be current refunded.



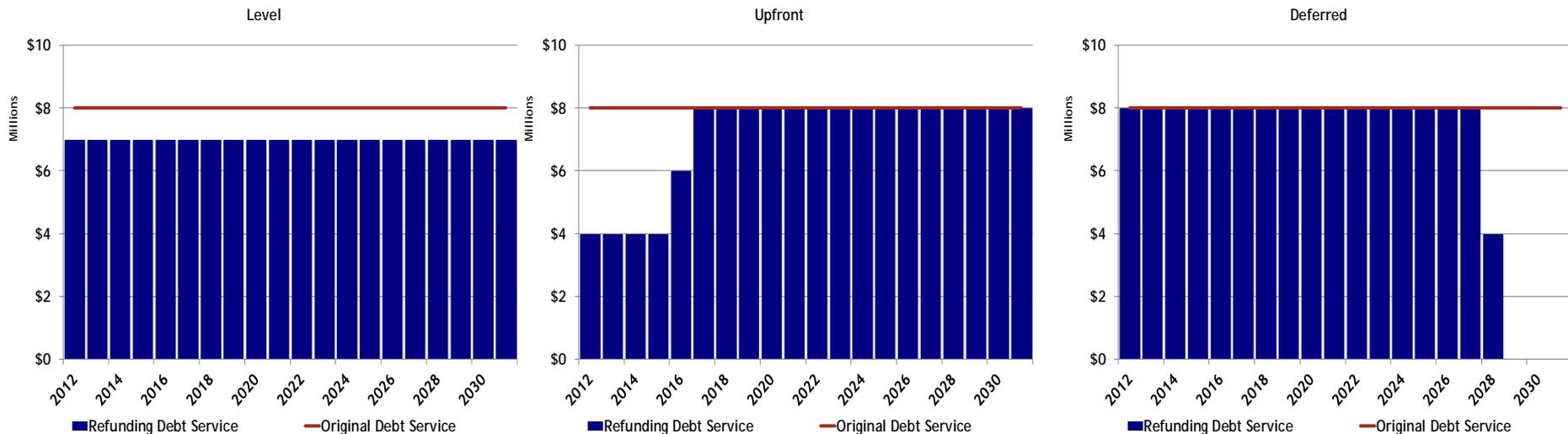
Why Refundings Happen

- A refunding allows an issuer to capture current market opportunities
- Because of the upward sloping shape of the yield curve, shorter loans have lower rates
- In a static market, just the passage of time often creates refunding opportunities
- Alternatively, interest rates can fall significantly shortly after the original bond sale
- Covenant change
- Restructuring payments (e.g., deferring debt service for cash-flow savings)
- Restructuring of products that failed (i.e. auction rate securities, insured variable rate demand obligations, etc.)



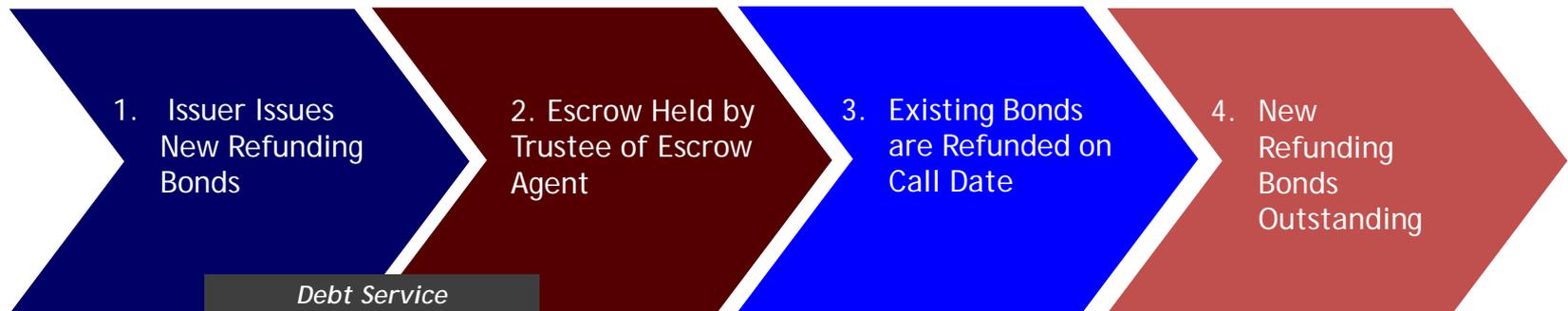
Savings Patterns

- Savings can be structured in four basic ways
 - Level - equal annual savings through maturity (most common and most conservative)
 - Proportional or Uniform - annual savings is proportional to debt service due in any year (for uneven debt service structures)
 - Upfront - near term savings with remaining debt service equal to prior debt service
 - Deferred - maintains prior debt service in the near term and shortens final maturity



Mechanics of a Refunding

- Refunding Bonds are issued to:
 - Pay scheduled interest on old bonds until the call date
 - At the call date, the refunding escrow is used to pay off the principal of the old bonds, plus a call premium, if applicable
 - At that point, only the new (or refunding bonds) are outstanding

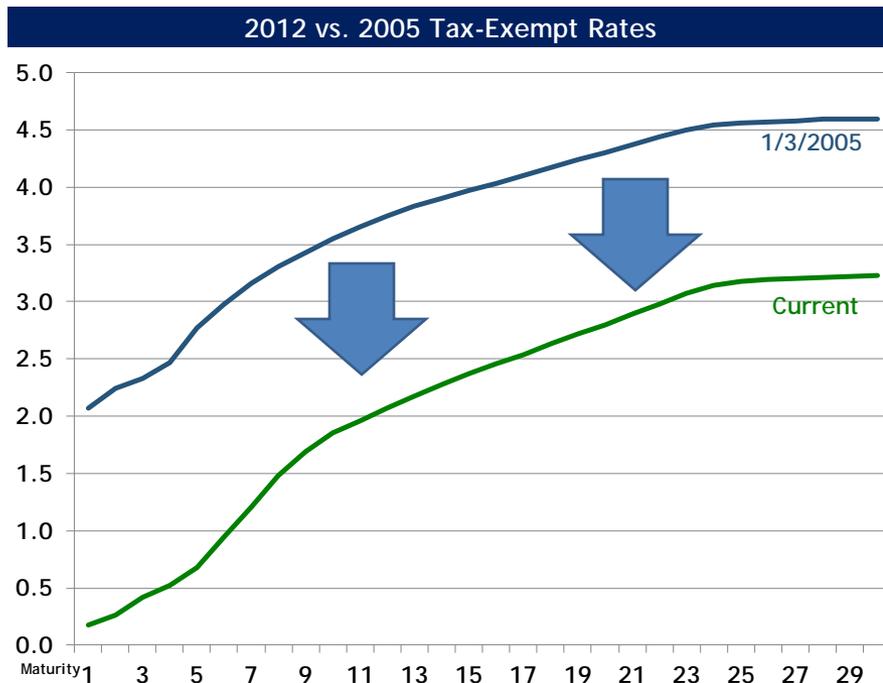


A large portion of the bond proceeds of a refunding issue are invested in a portfolio of securities, called an ESCROW, which is structured to have principal and interest payment dates occur on the same dates as the principal and interest payments of the refunded bonds.



Refunding Example: Green Water District

- Green Water District issued \$100 million Bottled Water Bonds in 2005
- Tax-exempt rates have dropped significantly since
- The District wants to consider refunding the 2005 Bonds to achieve economic savings



Series 2005 Bottled Water Bonds Assumptions	
Delivery Date	1/3/2005
Original Par	\$100,000,000
Reserve Fund	\$6,406,825
Final Maturity	7/1/2035
Cost of Issuance	\$1,000,000
Optional Redemption Date	7/1/2015 @ par
Structure	Level Debt Service



Advance Refunding Scenario

- Green Water District can “advance” refund the 2005 Bonds before the July 2015 optional redemption date
- The bond proceeds will be placed in an escrow account until the redemption date
- Total prior debt service is \$132.4 million
- Total new debt service is \$119.8 million
- This leads to gross savings of \$12.6 million
- With Net Present Value at 14.0%, it is economical for the District to refund the 2005 Bonds

Series 2012 Advance Refunding Analysis	
Refunding Bonds Assumptions	
Dated / Delivery Date	4/3/2012
Reserve Fund	Cash Funded
Refunding Bonds Summary	
Refunding Par	\$66,455,000
Premium	\$11,805,737
DSRF Release	\$5,436,825
Escrow	\$77,156,212
DSRF	\$5,874,650
COI	\$666,700
Prior Debt Service	\$132,413,025
Refunding Debt Service	\$119,849,731
Gross Savings	\$12,563,294
Refunding Bond Yield	2.79%
Escrow Yield	2.00%
Negative Arbitrage (\$)	\$1,804,379
Average Annual Savings	\$523,471
Net Present Value Savings (\$)	\$9,724,006
Net Present Value Savings (%)	14.04%



Maturity -by-Maturity Savings Analysis

- This chart shows the approximately savings that would be generated by refunding each individual maturity
- Since maturities 2016-2018 generate negative savings, we want to exclude them from the refunding

Maturity	Par	Savings by Maturity (\$)	Savings by Maturity(%)
7/1/2016	2,410,000	-59,997	-2.34%
7/1/2017	2,480,000	-43,261	-1.65%
7/1/2018	2,555,000	-37,499	-1.39%
7/1/2019	2,660,000	15,896	0.57%
7/1/2020	2,765,000	35,139	1.22%
7/1/2021	2,875,000	129,815	4.36%
7/1/2022	2,990,000	165,982	5.35%
7/1/2023	3,110,000	204,012	6.33%
7/1/2024	3,265,000	365,483	10.89%
7/1/2025	3,425,000	426,481	12.17%
7/1/2026	3,595,000	806,857	22.05%
7/1/2027	3,780,000	924,596	23.92%
7/1/2028	3,965,000	1,049,299	25.75%
7/1/2029	4,165,000	1,183,737	27.53%
7/1/2030	4,370,000	1,326,981	29.26%
7/1/2031	4,590,000	1,759,641	36.77%
7/1/2032	4,825,000	1,896,830	37.38%
7/1/2033	5,060,000	2,028,093	37.73%
7/1/2034	5,315,000	2,155,606	37.82%
7/1/2035	5,580,000	2,278,797	37.73%
Total	73,780,000	16,612,488	



Advance Refunding Scenario

- Savings generated prior to the call date comes from the lower interest rate on the refunded bonds
- Principal on those bonds was not refunded and remains the same

Maturity	Refunding Debt Service	Prior Debt Service	Gross Savings
7/1/2012	1,810,800	784,581	1,026,219
7/1/2013	3,621,600	3,209,650	411,950
7/1/2014	3,621,600	3,209,650	411,950
7/1/2015	3,621,600	3,209,650	411,950
7/1/2016	3,621,600	3,209,650	411,950
7/1/2017	3,621,600	3,209,650	411,950
7/1/2018	3,621,600	3,209,650	411,950
7/1/2019	6,406,600	5,874,650	531,950
7/1/2020	6,404,125	5,873,050	531,075
7/1/2021	6,403,325	5,872,250	531,075
7/1/2022	6,404,125	5,872,050	532,075
7/1/2023	6,405,125	5,872,250	532,875
7/1/2024	6,406,125	5,871,500	534,625
7/1/2025	6,405,150	5,873,000	532,150
7/1/2026	6,402,425	5,866,250	536,175
7/1/2027	6,406,125	5,871,250	534,875
7/1/2028	6,403,550	5,872,000	531,550
7/1/2029	6,404,425	5,868,250	536,175
7/1/2030	6,402,925	5,869,750	533,175
7/1/2031	6,403,500	5,870,750	532,750
7/1/2032	6,406,400	5,870,750	535,650
7/1/2033	6,401,900	5,869,250	532,650
7/1/2034	6,404,400	5,870,750	533,650
7/1/2035	6,402,400	5,869,500	532,900
Total	132,413,025	119,849,731	12,563,294

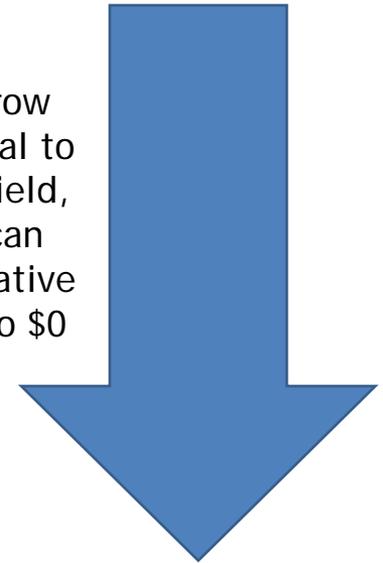


The Refunding Escrow

- An escrow account is a fund established to hold moneys that will be used to pay debt service on an outstanding issue until its call date
- The amount that must be deposited in this account is the present value cost of the refunding bonds' debt service payments through the call or refunding date at the escrow yield
- The yield on a refunding escrow is limited to the arbitrage yield of the refunding bonds, although it is typically much lower
- Negative arbitrage occurs when the escrow is reinvested at a rate that is lower than the permitted yield on the refunding bonds
- Negative arbitrage requires a larger refunding bond which reduces the savings

Total Escrow Cost	Escrow Yield	Escrow Cost	Negative Arbitrage
77,156,212	2.00%	75,351,833	1,804,379

If the escrow yield is equal to arbitrage yield, then we can reduce negative arbitrage to \$0



Total Escrow Cost	Escrow Yield	Escrow Cost	Negative Arbitrage
77,156,212	2.80%	77,156,212	0

Escrow Rules

- Yield on escrow cannot exceed yield on bond
- Typical escrow investment is in Treasury securities
- Treasury offers special “lower yielding” securities to help you manage this rule called State and Local Government Securities (SLGS)
- SLG yields are generally slightly less than regular Treasury securities and offer earning rates as low as 0%



Current Refunding Scenario

- Green Water District can “current” refund the 2005 Bonds within 90 days of July 2015 optional redemption date
- In a current refunding, the escrow period is much shorter, therefore negative arbitrage is significantly reduced/eliminated
- The District is exposed to interest rate risk in a current refunding as rates may not remain attractive in three years
- Assuming a current refunding under current market conditions, total new debt service is \$108.8 million vs. prior debt service of \$127.4 million
- This leads to gross savings of \$18.6 million
- Net Present Value increases to 17.6% in a current refunding due to the significant reduction in negative arbitrage

Series 2012 Current Refunding Analysis	
Refunding Bonds Assumptions	
Dated / Delivery Date	4/1/2015
Reserve Fund	Cash Funded
Refunding Bonds Summary	
Refunding Par	\$67,505,000
Premium	\$8,318,475
DSRF Release	\$6,406,825
Escrow	\$76,076,240
DSRF	\$5,476,650
COI	\$677,410
Prior Debt Service	\$127,353,600
Refunding Debt Service	\$108,789,513
Gross Savings	\$18,564,088
Refunding Bond Yield	2.76%
Escrow Yield	2.00%
Negative Arbitrage (\$)	\$142,753
Average Annual Savings	\$884,004
Net Present Value Savings (\$)	\$13,117,707
Net Present Value Savings (%)	17.59%



Maturity -by-Maturity Savings Analysis

- This chart shows the approximately savings that would be generated by refunding each individual maturity
- Since the 2016 maturity generates negative savings, we want to exclude it from the refunding

Maturity	Par	Savings by Maturity (\$)	Savings by Maturity(%)
7/1/2016	2,260,000	-10,930	-0.43%
7/1/2017	2,325,000	7,824	0.30%
7/1/2018	2,395,000	14,324	0.53%
7/1/2019	2,490,000	73,115	2.63%
7/1/2020	2,590,000	94,512	3.28%
7/1/2021	2,690,000	198,160	6.65%
7/1/2022	2,800,000	238,211	7.68%
7/1/2023	2,915,000	280,283	8.69%
7/1/2024	3,060,000	456,480	13.61%
7/1/2025	3,215,000	523,640	14.94%
7/1/2026	3,370,000	937,343	25.61%
7/1/2027	3,545,000	1,066,516	27.59%
7/1/2028	3,715,000	1,203,125	29.53%
7/1/2029	3,905,000	1,350,325	31.40%
7/1/2030	4,100,000	1,507,013	33.23%
7/1/2031	4,305,000	1,981,139	41.40%
7/1/2032	4,520,000	2,204,999	43.45%
7/1/2033	4,745,000	2,442,310	45.44%
7/1/2034	4,980,000	2,700,365	47.38%
7/1/2035	5,230,000	2,975,255	49.26%
Total	70,035,000	20,244,008	



Current Refunding Scenario

- As shown in the table to the right, gross savings in the current refunding scenario is greater than in the advance refunding scenario

Maturity	Refunding Debt Service	Prior Debt Service	Gross Savings
7/1/2015	1,890,675	1,655,613	235,063
7/1/2016	3,781,350	3,156,650	624,700
7/1/2017	6,406,350	5,476,650	929,700
7/1/2018	6,402,600	5,472,050	930,550
7/1/2019	6,406,600	5,476,650	929,950
7/1/2020	6,404,125	5,472,250	931,875
7/1/2021	6,403,325	5,469,050	934,275
7/1/2022	6,404,125	5,471,850	932,275
7/1/2023	6,405,125	5,475,250	929,875
7/1/2024	6,406,125	5,475,000	931,125
7/1/2025	6,405,150	5,472,500	932,650
7/1/2026	6,402,425	5,467,500	934,925
7/1/2027	6,406,125	5,474,750	931,375
7/1/2028	6,403,550	5,473,250	930,300
7/1/2029	6,404,425	5,473,000	931,425
7/1/2030	6,402,925	5,468,500	934,425
7/1/2031	6,403,500	5,469,500	934,000
7/1/2032	6,406,400	5,475,250	931,150
7/1/2033	6,401,900	5,470,000	931,900
7/1/2034	6,404,400	5,473,750	930,650
7/1/2035	6,402,400	5,470,500	931,900
Total	127,353,600	108,789,513	18,564,088

Debt Service Reserve Fund Surety Policy

- Once upon a time, there was a magical product known as “bond insurance”
- Bond insurance could turn an “A” rated credit into a “AAA” rated credit!
- Sometimes, a separate insurance policy would be offered as a substitute for a funded Debt Service Reserve Fund
- Unfortunately, the bond insurers’ magic got destroyed in the financial crisis of 2008 and we seldom see this product anymore
- A bond that has a DSRF Surety can be challenging to refund as the size of the refunding bond issue has to be increased to fund the reserve

Determining Minimum Savings Thresholds

- A refunding “uses up” a valuable asset, your call option, so having criteria for measuring savings is important
- % of refunded par: we should realize (after all costs) a savings, in present value terms, of at least x% of the refunded debt
 - Many issuers use a Present Value Savings target of between 3% and 5% of refunded par measured on a maturity-by-maturity or aggregate basis
- “Gross” or “net” savings
 - Takes into account the offset in savings from lower interest rates by the loss of any earnings on a debt service reserve fund
 - ✓ The yield on a debt service reserve fund is limited to the bond yield on the refunding bonds
 - ✓ Lowering the arbitrage rate on new bonds may require more arbitrage rebate, eating away some of the “net” savings

Other Savings Thresholds

- Total dollar savings rule:
 - An issuer may impose an absolute minimum dollar savings as well
 - The savings generated should be significantly greater than the costs of issuing the refunding bonds
- Black-Scholes option pricing models
 - Developed by Fischer Black and Myron Scholes in 1973
 - Calculates the “value” of an option based on assumptions and mathematically complex model
 - Policy question is amount of value that must be captured in a refunding
- Sliding targets based on where interest rates are in the cycle (i.e., how low or high compared to historical averages)

Debt Management

- Who monitors outstanding debt?
- Refunding policies

Recent Market Developments - Direct Purchase

- A number of banks have been active in buying municipal obligations directly
 - Mostly 3 to 5 year terms, a few will go longer
 - Fixed or variable
- There are a number of benefits to direct placement
 - No rating requirement
 - No official statement
 - Loan, not a security
 - Reduced costs of issuance
 - Expedited closing
 - Structuring flexibility
 - Competitive interest rates

Recent Market Developments - Direct Purchase

- When might an issuer choose direct purchase for a refunding?
 - Remaining term on bonds is short enough to be attractive to banks
 - Issue size is too small to bear cost of public offering
 - Variable rate bonds where there is a need to replace credit facility
 - Desire to move from one type of variable rate (i.e. commercial paper) to another type (i.e. index floaters, fixed rate notes)
- Direct Purchase considerations
 - Ratings on parity debt
 - Loan vs security issues
 - Bank required covenants